

***Amendments to the Claims***

The listing of claims will replace all prior versions, and listings of claims in the application.

1. *(Currently Amended)* A method of preparing a user recommendation comprising:

generating, in memory, a sparse unary ratings matrix from a user's selected preferences, wherein said user's selected preferences are represented as ~~binary~~unary data entries in said sparse unary ratings matrix, wherein each ~~binary~~unary data entry has a value of either zero or one;

forming ~~in at least one data processing device~~ a plurality of data structures representing said sparse unary ratings matrix;

forming ~~in the at least one~~ data processing device a runtime recommendation model from said plurality of data structures;

determining ~~in the at least one data processing device~~ a recommendation from said runtime recommendation model in response to a request for a recommendation; and

providing said recommendation in response to said request.

2. *(Original)* The method of claim 1 further comprising calculating a unary multiplicity voting recommendation from said runtime recommendation model.

3. *(Original)* The method claim 1 further comprising calculating a non-unary multiplicity voting recommendation from said runtime recommendation model.

4. *(Previously Presented)* The method of claim 2 wherein said calculating a unary multiplicity voting recommendation comprises calculating an anonymous recommendation.

5. *(Previously Presented)* The method of claim 2 wherein said calculating a unary multiplicity voting recommendation comprises calculating a personalized recommendation.

6. *(Previously Presented)* The method of claim 3 wherein said calculating a non-unary multiplicity voting recommendation comprises calculating an anonymous recommendation.

7. *(Previously Presented)* The method of claim 3 wherein said calculating a non-unary multiplicity voting recommendation comprises calculating a personalized recommendation.

8. *(Previously Presented)* The method of claim 1,

wherein said forming a runtime recommendation model from said plurality of data structures comprises:

mapping said sparse unary ratings matrix into a plurality of sub-space ratings matrices, said mapping comprising multiplying said unary ratings matrices by a mappings matrix between said unary ratings matrices and a plurality of categories, and wherein each of said sub-space ratings matrices corresponds to one of said plurality of categories.

9. (*Withdrawn*) A method of preparing a recommendation to be accessed by a user comprising the steps of:

- providing a sparse ratings matrix;
- banding said sparse ratings matrix;
- distributing said banded sparse ratings matrix to a plurality of computing nodes, wherein each of said computing nodes generates an output;
- forming a runtime recommendation model from said output of said plurality of computing nodes;
- determining a recommendation from said runtime recommendation model in response to a request from a user; and
- providing said recommendation to said user.

10. (*Withdrawn*) A method of preparing a recommendation to be accessed by a user comprising the steps of:

- providing a sparse ratings matrix;
- striping said sparse ratings matrix;
- distributing said striped sparse ratings matrix to a plurality of computing nodes, wherein each of said computing nodes generates an output;
- forming a runtime recommendation model from said output of said plurality of computing nodes;
- forming a runtime recommendation model from said plurality of sub-space ratings matrix;

determining a recommendation from said runtime recommendation model  
in response to a request from a user; and  
providing said recommendation to said user.

11. *(Currently Amended)* A method of preparing a user recommendation comprising:

generating, in memory, a sparse unary ratings matrix including ratings data represented as binaryunary data entries, wherein each binaryunary data entry has a value of either zero or one;

providing in a recommendation system including at least one data processing device an update ratings data structure;

forming at the at least one data processing device a plurality of data structures representing said sparse unary ratings matrix;

forming in the at least one data processing device a runtime recommendation model from said plurality of data structures and said update ratings data structure;

determining at the recommendation system a recommendation from said runtime recommendation model in response to a request for a recommendation;  
and

providing said recommendation in response to said request.

12. *(Original)* The method of claim 11 further comprising calculating a unary multiplicity voting recommendation from said runtime recommendation model.

13. *(Original)* The method of claim 11 further comprising calculating a non-unary multiplicity voting recommendation from said runtime recommendation model.

14. *(Previously Presented)* The method of claim 12 wherein said calculating a unary multiplicity voting recommendation comprises calculating an anonymous recommendation.

15. *(Previously Presented)* The method of claim 12 wherein said calculating a unary multiplicity voting recommendation comprises calculating a personalized recommendation.

16. *(Previously Presented)* The method of claim 13 wherein said calculating a non-unary multiplicity voting recommendation comprises calculating an anonymous recommendation.

17. *(Previously Presented)* The method of claim 13 wherein said calculating a non-unary multiplicity voting recommendation comprises calculating a personalized recommendation.

18. *(Previously Presented)* The method of claim 11, further comprising:

mapping said sparse unary ratings matrix into a plurality of sub-space ratings matrices, said mapping comprising multiplying said unary ratings matrices by a mapping matrix between said unary ratings matrices and a plurality of categories, and each of said sub-space ratings matrices corresponding to one of said plurality of categories.

19. *(Withdrawn)* The method of claim 1, wherein forming a runtime recommendation model from a plurality of data structures, comprises:

forming a first recommendation model from said plurality of data structures; and

perturbing said first recommendation model to generate a runtime recommendation model.

20-26. *(Canceled)*.

27. *(Withdrawn)* The method of claim 1, wherein forming a runtime recommendation model from a plurality of data structures, comprises:

forming a first recommendation model from said plurality of data structures;

truncating said first recommendation model to generate a runtime recommendation model.

28 - 34. *(Canceled)*.

35. *(Withdrawn)* A method of preparing a recommendation to be accessed by a user comprising the steps of:

providing a first ratings matrix;

providing a second ratings matrix;

forming a runtime recommendation model from a cross-set of co-occurrences of said first ratings matrix and said second ratings matrix;

calculating a recommendation from said runtime recommendation model  
in response to a request from a user; and  
providing said recommendation to said user.

36. *(Currently Amended)* A method of preparing a user recommendation ~~in a~~  
~~first recommendation system~~, comprising:

receiving at ~~the~~ first recommendation system, including a data  
processing device, a runtime recommendation model from a second  
recommendation system, wherein the runtime model is formed from a plurality of  
data structures representing a unary array of ratings entries that can be  
arithmetically manipulated, ~~wherein data in the unary array of ratings entries is~~  
~~binary data~~, wherein each ~~binary~~unary data entry has a value of either zero or  
one, and wherein a majority of the entries in the array are zero;

receiving at the first recommendation system a request for a  
recommendation;

generating in the data processing device of the first recommendation  
system a recommendation using the received runtime recommendation model;  
and

transmitting the recommendation.

37. *(Previously Presented)* The method of claim 36, wherein said generating a recommendation comprises:

calculating a unary multiplicity voting recommendation from the received runtime recommendation model; and  
generating an anonymous recommendation.

38. *(Previously Presented)* The method of claim 36, wherein said generating a recommendation comprises:

calculating a unary multiplicity voting recommendation from the received runtime recommendation model; and  
generating a personalized recommendation.

39. *(Previously Presented)* The method of claim 36, wherein said generating a recommendation comprises:

calculating a non-unary multiplicity voting recommendation from the received runtime recommendation model; and  
generating an anonymous recommendation.

40. *(Previously Presented)* The method of claim 36, wherein said generating a recommendation comprises:

calculating a non-unary multiplicity voting recommendation from the received runtime recommendation model; and  
generating a personalized recommendation.



41. (*Currently Amended*) A method for generating a runtime recommendation model ~~in a first recommendation system~~ comprising:

retrieving at a first recommendation system, including a data processing device, a unary array of ratings entries that can be arithmetically manipulated, wherein data in the unary array of ratings entries is binaryunary data, wherein each binaryunary data entry has a value of either zero or one, and wherein a majority of the entries in the array are zero;

receiving at the first recommendation system an update to the unary array of ratings entries;

generating in at the data processing device of the first recommendation system the runtime recommendation model from a plurality of data structures representing the unary array of ratings entries; and

providing the runtime recommendation model from the first recommendation system to a second recommendation system, wherein the second recommendation system generates a recommendation using the runtime recommendation model.

42. (*Previously Presented*) A data processing device, comprising:

a processor configured to generate in memory a sparse unary ratings matrix from a user's selected preferences, wherein said user's selected preferences are represented as binaryunary data entries in said sparse unary ratings matrix, wherein each binaryunary data entry has a value of either zero or one;

wherein the processor is configured to form a plurality of data structures representing said sparse unary ratings matrix;

wherein the processor is configured to store said plurality of data structures in the memory;

wherein the processor is configured to form a runtime recommendation model from said plurality of data structures; and

wherein the processor is configured to determine a recommendation from said runtime recommendation model in response to a request for a recommendation.

43. *(Currently Amended)* A data processing device comprising:

means for generating in memory a sparse unary ratings matrix from a user's selected preferences, wherein said user's selected preferences are represented as binaryunary data entries in said sparse unary ratings matrix, wherein each binaryunary data entry has a value of either zero or one, and wherein a majority of the entries in said sparse unary ratings matrix are zero;

means for forming a plurality of data structures representing said sparse unary ratings matrix;

means for storing said plurality of data structures in the memory;

means for forming a runtime recommendation model from said plurality of data structures; and

means for determining a recommendation from said runtime recommendation model in response to a request for a recommendation.

44. (Previously Presented) A computer-readable storage medium ~~including control logic~~ having stored therein computer-executable instructions that, ~~when if~~ executed by a ~~processor~~ processing device, ~~enables the computer to generate a user recommendation according~~ cause the processing device to perform a method comprising:

generating in memory a sparse unary ratings matrix from a user's selected preferences, wherein said user's selected preferences are represented as binaryunary data entries in said sparse unary ratings matrix, wherein each binaryunary data entry has a value of either zero or one;

forming a plurality of data structures representing said sparse unary ratings matrix;

forming a runtime recommendation model from said plurality of data structures; and

determining a recommendation from said runtime recommendation model in response to a request for a recommendation.